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placarded. Investigation by the health department showed that the disease was diphtheria and that the case had not previously been reported.

The physician in attendance stated that he had treated the patient for 10 days for tonsillitis or quinsy; that on November 5 he suspected that the disease might be diphtheria and attempted to report by telephone to the health department, but failed to do so, as "the line was busy." He made no further attempt to report the case until after the investigation by the health department on the 8th.

He was found guilty in the police court of failing to report the case, and a fine of \$10 was imposed.

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## STANDARDS FOR MILK.

### THEIR NECESSITY TO THE WELFARE OF THE DAIRY INDUSTRY.<sup>1</sup>

By JOHN F. ANDERSON, President, American Public Health Association.

This paper is a discussion of why standards for milk are necessary to the welfare of the milk industry, and in the beginning it is desired to present a clear idea of what kind of standards is meant.

Milk is one of the few articles of food to which two kinds of standards are applicable and for which two kinds of standards are essential. One of these standards is the chemical standard by which to judge the food value of milk and has for its prime purposes to prevent fraud on the part of the dealer and to insure the purchaser's receiving the number of food units for which he pays. This standard is of but slight sanitary importance.

The other, and the more important, standard is that by which to measure the sanitary quality of the milk, or the standard of decency and health of the dairymen and cows producing it. While the methods used for its application are not as yet as exact as those for the chemical standard they are nevertheless sufficiently so to serve our purpose.

When a farmer has an apple orchard he expects to sell his apples on grade—a higher price for the best, a lower for the others; he never expects to sell all for the same price. It is the same when eggs are sold; they are sold strictly on grade—the freshest and those delivered to the consumer most quickly after being laid command the highest price, those not so fresh a lower price, and so on; and when the best are mixed with the others the price is that of an inferior grade.

When the farmer comes to sell his milk to the dealer and the dealer to sell it to the consumer, what do we find is the usual practice? As a rule, the good milk is mixed with the bad and sold for one price

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<sup>1</sup> Read before the meeting of the International Association of Dairy and Milk Inspectors held at Washington, D. C., Oct. 27, 1915.

and that price is generally less than the price the good milk should bring. The bad milk should not be sold at all.

Now let us consider in detail some of the various phases of this one-quality, one-price practice of selling milk and the effect it has upon the improvement of the sanitary quality of the milk supply and upon the future of the milk industry. For purposes of discussion it is convenient to consider this under several headings:

1. In every community the market milk contains milk of several degrees of excellence. Some of it is very clean and of good sanitary quality; some (and often most of it) is very dirty and therefore of poor sanitary quality. In other words, some of it is safe and some of it dangerous to the health of the consumer, but all of it may be selling under one label and at one price.

You do not need to be told that this is so, for each of you can recall, from personal experience, communities in which there are dairy farms producing milk under the intelligent supervision of decent, careful, and honest farmers, and you know that such milk is clean and safe. You can also recall dairy farms on which milk is produced from ill-kept and perhaps diseased cows, handled in a slipshod manner, not refrigerated, and dirty. Such milk is dangerous to the consumer. But the milk from the good farm is sold to the same dealer as the milk from the bad farm, the two are mixed, and the good milk is made bad. The result of this "one-quality, one-price" method of selling milk is that the good milk is sold for less than it is worth, the bad milk is permitted to be sold (when it should not be sold, at least not for food purposes), and the sanitary quality of the entire milk supply is lowered to the level of the worst entering into its makeup.

2. In every community some dairy farms and dairy farmers are better than others—cleaner, more decent, and produce cleaner milk; but usually the milk of the clean dairymen is dumped into the same tank with the milk of their dirty neighbors and the clean farmer gets no higher price for his clean and safe milk than the dirty farmer gets for his dirty and unsafe milk.

Again, the "one-quality, one-price" puts a premium on slipshod methods and slipshod farmers, and fails to reward the decent and careful farmer, who uses intelligence in the production of his milk and wants to produce and sell a clean, safe milk, a milk that can be consumed by babies and children with safety. The result is that the decent farmer loses his incentive to improve his herd and his barns and to introduce modern methods. Unless such men are supported by the decent dealers they gradually drop to the level of their more shiftless neighbors.

3. In every community some milk dealers are more decent and more honest than others. They desire to sell the best kind of milk, but are confronted by the fact that the bad milk sold by indecent

and dishonest dealers brings the same price and carries the same label as good milk.

Again we see the working of the "one-quality, one-price" system. These decent and honest dealers strive to keep their plant in a sanitary condition, refrigerate their milk, thoroughly clean and sterilize their utensils and bottles, and endeavor to make contracts with the decent and honest farmers who produce a clean and safe milk; but on account of the competition of the indecent and dishonest dealers, fostered and protected by the "one-quality, one-price" system, are put to an obvious disadvantage. The indecent and dishonest dealer is protected in his sale of dirty and dangerous milk, while the decent and honest dealer is hindered in his efforts to provide for his customers a clean, safe milk.

This condition is such a familiar one that we all can recall communities in which the conditions are as those recited. We even know municipalities where the poor milk is sold to hospitals and asylums because under the one-label, one-price system one kind of milk appears to be as good as another.

4. In every community there are some milk consumers who value decency and safety more than others, and are prepared and want to buy the best milk, but are unable to locate it because all milk offered for sale is labeled the same and is sold for the same price.

It is certainly a fact that there are persons who either through ignorance or for other reasons do not care whether the milk they buy is clean and safe or whether it is not clean and safe. To them all milk is the same. The majority of milk consumers, however, want clean, safe milk. They want a milk that is free from disease germs and that they can give to their children and can themselves use. They want the best milk, but on account of the operation of the "one-quality one-price" system they can not distinguish between the clean, safe milk and the dirty, unsafe milk. They have no difficulty, however, in getting the best quality of eggs when such are wanted, as eggs are not sold under the "one-quality one-price" system but are sold on grade. When those of the community who value decency and safety become sufficiently aroused to demand that a distinction be made between the good and the bad milk it sometimes happens that the decent dealers are enabled to provide a safe milk at an increased price.

5. This deadlock of "one quality one price" is tacitly fostered by boards of health and milk inspectors who have followed the false theory that "the entire milk supply must be elevated at the same time."

In most communities this is not possible; it is much easier to lift one end of a big board than to lift the whole board. In many places the authorities who have under their jurisdiction the control of the

milk supply seem to think that the only way to improve the milk supply is to raise the level of the entire supply at the same time. They do not seem to grasp the fact that by breaking away from the "one-quality one-price" system and by fostering the efforts of those dealers who want to sell a clean, safe milk at a higher price the elevation of the entire supply is made possible in a reasonable time. As soon as the people find that they can buy a clean and safe milk and the dealers find that they can get a higher price for such milk we at once begin to establish grades of milk. When this is done it will be found that it will not be difficult to convince the dealers of the advantage of providing for safe milk selling at a higher price than the bulk of the milk sold. There can be no question that the production of so-called certified milk has been one of the biggest factors in the improvement of the general milk supply, and this in spite of the fact that certified milk is less than one per cent of the total milk supply; but wherever certified milk is sold, that place at once has forced upon it grades of milk, and grades of milk mean that the milk supply is composed of milk of varying degrees of excellence and sold for prices varying with its sanitary quality.

After having briefly discussed some of the causes that have to do with the present unsatisfactory condition of the milk supply in many of our cities and towns, the writer will now consider how, in his opinion, these causes can be removed and how the welfare of the dairy industry can be promoted.

As he has endeavored to point out, the greatest single obstacle to the improvement of the milk supply is the "one-quality one-price" system of selling milk; or, in other words, the lack of grades of milk, the best grade bringing the highest price, the lower grades a lower price. Therefore, the remedy is milk grades based upon milk standards.

The grading of milk and the establishment and enforcement of standards enables us at once to distinguish clean milk from dirty milk, the clean farmer from the dirty farmer, the clean dealer from the dirty dealer, the consumer of clean milk from the consumer of dirty milk. This system puts a label on each grade, so that the buyer may choose; it breaks up the "one-quality one-price" system and creates several qualities at several prices; it stimulates the production and sale of better milk by establishing a better price.

It has always been one of the things which the writer could never understand why the idea seems so deeply rooted in many of those who have to do with the milk industry—producers, inspectors, and consumers—that the farmer or the dealer who sells a clean milk and therefore a safe milk should not receive a higher price than his neighbor receives for a dirty, unsafe milk. The establishment of grades and standards for milk will cause this idea to disappear.

In December, 1910, there was held in New York City a meeting participated in by the various groups interested in the welfare of the milk industry. There were present at the meeting and took part in the program dairy farmers, milk dealers, health authorities, and consumers. As a result of the discussions at this meeting it was apparent that the time had come for an organized effort to be made to establish and enforce grades and classes of milk. The New York milk committee, which is a voluntary organization working in the interests of improving the milk supply of New York City, decided in the following spring to appoint and finance a commission on milk standards. This decision was the direct result of the observation of the New York milk committee, emphasized by the meeting of the fall before, that there were great incompleteness and lack of uniformity in the milk standards, milk ordinances, and rules and regulations of public health authorities throughout the country for the control of public milk supplies. There was a need that health officers should be furnished ordinances drawn from large experience and mature judgment and that ordinances should be as free from erroneous positions and as uniform for the different sections of the country as possible.

From a list of over 200 names of men of prominence in medicine, sanitation, and public health, of laboratory workers, and those recognized as authorities on the milk question, 20 names were finally selected and those 20 men were asked to accept appointment on the commission on milk standards. The first report of the commission was not published until after its third meeting, one year after the organization of the commission; the second and amended report was published a year later. Both these reports were published by the United States Public Health Service.<sup>1</sup>

In its report the commission stated that "Proper milk standards, while they are essential to efficient milk control by public health authorities and have as their object the protection of the milk consumer, are also necessary for the ultimate well-being of the milk industry itself. Public confidence is an asset of the highest value in the milk business. The milk producer is interested in proper standards for milk, since those contribute to the control of bovine tuberculosis and other cattle diseases and distinguish between the good producer and the bad producer. The milk dealer is immediately classified by milk standards, either into a seller of first-class milk or a seller of second-class milk, and such distinction gives to the seller of first-class milk the commercial rewards which he deserves, while it inflicts just penalties on the seller of second-class milk. For milk consumers, the setting of definite standards accompanied by proper labeling makes it possible to know the character of the milk which is

<sup>1</sup> Public Health Reports, vol. 27, No. 19, May 10, 1912, pp. 673-700, and vol. 28, No. 34, Aug. 22, 1913, pp. 1733-1756.

purchased and to distinguish good milk from bad milk. In the matter of public health administration, standards are absolutely necessary to furnish definitions around which the rules and regulations of city health departments can be drawn and the milk supply efficiently controlled."

Throughout all of the deliberations of the commission it was recognized that bacterial testing, using for the purpose the "bacterial count," was the most important single factor in grading milk. It was clearly understood that the bacterial count should be used only with a full understanding of its limitations, but those limitations all put together fail to shake or impair the consistency of the bacterial count when properly applied to the grading of milk. Isolated instances of wide discrepancies disappear when laboratories use uniform methods and do a sufficient number of examinations. The parallel between clean dairy farmers, proper refrigeration, efficient pasteurization, and the bacterial content, is constant and convincing.

The grades decided upon by the commission on milk standards are only three. It is, of course, obvious that there may be many degrees of excellence in milk between the highest and the lowest, but three grades are ample to properly classify the milk supply of any community. The standards must of necessity be decided upon somewhat arbitrarily, but experience has shown us certain limits within which milks of known sanitary quality may be defined. We must in each grade indicate only the minimum, for in each grade there may be milk much better than the minimum. It happens that some communities because of more favorable conditions may have more rigorous standards than others. Thus grade "A" milk in New York City may have a limit of 200,000 bacteria per cc., while grade "A" milk in Syracuse may have a limit of 10,000 per cc.

The grading of milk and the establishment of standards have justified themselves in New York City. The writer is informed that over 20 per cent of the milk supply of that great city is "Grade A, Pasteurized" and sells for 10 cents a quart. Many other cities throughout the country are establishing grades, while New York State has established grades for all cities and villages.

What the grades for milk should be will not be discussed here, as the grading of milk within certain limits is governed by local conditions. But it is desired to emphasize that it is the belief of the writer that no raw milk should be allowed in any grade except the better classes of grade A.

Any community so minded can experience the rapid growth of a clean and safe milk supply as the result of the establishment of grades and the enforcement of milk standards, because the clean and honest farmers by reason of the increased financial return are encouraged to produce and to sell clean milk to the clean and honest dealer. These

latter, by reason of the use of the label signifying a higher quality of milk, can sell this better milk at an increase to those customers who value cleanliness and safety. A more general production of clean milk is encouraged and brought about in any community through the individuality and identification given to clean milk by the distinctive label indicating its superior quality and the greater market value of such milk. The production of a special or limited class of milk is not here meant, but an increase in the supply of the regular market milk which is already clean or capable of being made clean, but the production of which is discouraged by the fact that under existing conditions this milk can not be recognized by the consumer and given the preference by him which it would be given if he could recognize it by means of the label or other identifying mark.

### PLAQUE-PREVENTION WORK.

#### LOUISIANA—NEW ORLEANS—PLAUE ERADICATION.

The following reports of plague-eradication work at New Orleans were received from Surg. Creel, of the United States Public Health Service, in charge of the work:

WEEK ENDED DEC. 18, 1915.

| OUTGOING QUARANTINE.   |        | LABORATORY OPERATIONS.                                  |         |
|--|--------|---|---------|
| Vessels fumigated with sulphur.....                            | 9      | Rodents received, by species:                           |         |
| Vessels fumigated with carbon monoxide..                       | 18     | Mus rattus.....   | 151     |
| Vessels fumigated with cyanide gas.....                        | 6      | Mus norvegicus.....                                     | 919     |
| Sulphur used, pounds.....                                      | 1,804  | Mus alexandrinus.....                                   | 192     |
| Coke consumed in carbon-monoxide fumi-<br>gation, pounds.....  | 25,700 | Mus musculus.....                                       | 8,073   |
| Cyanide used in cyanide-gas fumigation,<br>pounds.....         | 106    | Wood rats.....  | 174     |
| Sulphuric acid used in cyanide-gas fumiga-<br>tion, pints..... | 159    | Musk rats.....  | 95      |
| Clean bills of health issued.....                              | 34     | Putrid (included in enumeration of<br>species).....     | 87      |
| Foul bills of health issued.....                               | 5      | Total rodents received at laboratory.....               | 9,004   |
| FIELD OPERATIONS.  |        | Rodents examined.....                                   | 2,302   |
| Rats trapped.....  | 9,445  | Suspicious rats.....                                    | 33      |
| Premises inspected.....  | 6,510  | Plague rats confirmed.....                              | None.   |
| Notices served.....  | 835    | Last case of human plague, Sept. 8, 1915.               |         |
| Garbage cans installed.....                                    | 9      | Last case of rodent plague, Dec. 11, 1915.              |         |
| BUILDINGS RAT PROOFED.   |        | Total number of rodents captured to Dec. 18             | 544,119 |
| By elevation.....  | 66     | Total number of rodents examined to Dec.                |         |
| By marginal concrete wall.....                                 | 89     | 18.....   | 310,393 |
| By concrete floor and wall.....                                | 86     | Total cases of rodent plague to Dec. 18, by<br>species: |         |
| By minor repairs.....  | 226    | Mus musculus.....                                       | 5       |
| Total buildings rat proofed.....                               | 467    | Mus rattus.....   | 18      |
| Square yards of concrete laid.....                             | 8,163  | Mus alexandrinus.....                                   | 9       |
| Number of lots and sheds, planking re-<br>moved.....           | 120    | Mus norvegicus.....                                     | 238     |
| Number of buildings demolished.....                            | 30     | Total rodent cases to Dec. 18, 1915....                 |         |
| Total buildings rat proofed to date (abated). 98,974           |        |   | 270     |